

Remarks

Claims 1-5, 7-11 and 13-23 are at issue. Claims 6 & 12 have been cancelled and claim 23 has been added. Claims 19, 21 and 22 are allowable. Claims 13-18 and 20 would be allowable if rewritten to overcome the 35 USC § 112, second paragraph rejections. Claims 4-5, 10-11, 13-18 and 20 stand rejected under 35 USC § 112, second paragraph. Claims 1-5 stand rejected under 35 USC 102(b) as being anticipated by Kriegel et al. Claims 7 & 11 stand rejected under 35 USC 103 (a) as being unpatentable over Kriegel et al.

A new declaration is enclosed that corrects the error pointed out by the Examiner.

The specification has been amended as suggested by the Examiner.

Claims 4-5, 10-14, 17, 20 & 22 have been amended to overcome the objections raised by the Examiner.

Independent claims 1 & 7 have been rejected based on Kriegel et al. Kriegel uses a dewatering step which in their case is a distillation process. See col. 3, lines 45-50. The applicant's invention does not have a dewatering step. As a result the applicant's invention is a continuous process, whereas Kriegel's invention is a batch process in that the dewatering step has to be performed for a batch of material before there is further processing. Claim 1 has been amended to clearly state that a continuous stream of used oil is heated and then the water is removed in a continuous process. Claim 7 has been amended to clearly state that no-dewatering step occurs before the sample is heated. In addition, claim 7 states that the percentage of water in the stream is tested and when it is greater than 4% it is heated by microwave. Claim 23 states that the oil stream is heated conventionally if the percentage of water is not greater than 4%. By removing the dewatering step and making the processes continuous from beginning to end, the present invention provides a process more suited to a production system. In addition, this reduces the cost of processing used oil. Claims 1 & 7 are allowable over the prior art.

Claims 2-5, 8-11 and 23 are allowable as being dependent from an allowable base claim.

The application has been placed in condition for allowance, prompt reconsideration and allowance are respectfully requested.

In the Claims (marked up version)

Please cancel claims 6 & 12. Please add claim 23.

1(Amended). A burnable used oil fuel product by the process comprising:

(a) obtaining a used oil sample having at least 1% (by weight) aqueous substances;

(b) creating a used oil stream to form the used oil sample;

[(b)c) heating the used oil [sample] stream to a temperature of from about 20°C to about 60°C to form a heated used oil stream; and

[(c)d) extracting, in a continuous process, a volume of water from the heated used oil stream by adding super critical CO₂.

4(Amended). The burnable used oil fuel product of claim 3 wherein the microwave heating energy [is] has a frequency of about 2.45 GHz.

5(Amended). The burnable used oil fuel product of claim 1 wherein the extraction step is performed in a trapping vessel having a bottom valve for removing bottom components and a means for regulating pressure, whereby water and extracted solid constituents are removed from [the] a bottom vessel.

7(Amended). A process for recovering burnable used oil fuel from a used oil sample, process comprising:

(a) obtaining a used oil sample having at least 1% (by weight) aqueous substances;

(b) creating a used oil stream form the used oil sample without a dewatering step;

(c) testing the used oil stream for an percentage of water;

[(b)d) when the used oil stream has greater than 4% water, microwave heating the used oil [sample] stream to a temperature of from about 20°C to about 60°C to form a heated used oil stream; and

[(c)e) extracting, in a continuous process, a volume of water from the heated used oil stream by adding super critical CO₂.

10(Amended). The process for recovering burnable used oil fuel from a used oil sample of claim 9 wherein the microwave heating energy [is] has a frequency of about 2.45 GHz.

11(Amended). The process for recovering burnable used oil fuel from a used oil sample of claim 7 wherein the extraction step is performed in a trapping vessel having a bottom valve for removing bottom components and a means for regulating pressure, whereby water and extracted solid constituents are removed from [the] a bottom vessel.

13(Amended). An apparatus for purifying waste oil, comprising:

(a) a preprocessing analyzer section connected to an input stream for waste oil and an output;

(b) a preprocessing switch controlled by the analyzer section having an input connected to an analyzer section output and an output, the preprocessing switch having a first output and a second output;

(c) a heating section connected to the first output of the preprocessing switch [output]; and a microwave heating section connected to the second output; and

(d) a demulsification section connected to [the] a heating output and having an output lower for settling.

14(Amended). The apparatus for purifying waste oil of claim 13 wherein the apparatus further comprises a preheating section connected [upstream] before of the preprocessing switch.

17(Amended). The apparatus for purifying waste oil of claim 15 wherein the waveguide includes a straight member between a first end and a second end, the first end is a curved member having a 45° "H" plane bend of miter construction.

20(Amended). The apparatus for purifying waste oil of claim 19 wherein the apparatus further comprises an analyzer section after the pump that determines a percentage of water in the waste oil stream feed.

22(Amended). The apparatus for purifying waste oil of claim 21 wherein the microwave heating section further comprises a sensor connected to the microwave generator [and] for determining an amount of reflected energy.

23(New). The process for recovering burnable used oil fuel from a used oil sample of claim 7, further including the steps of:

_____ (f) when the used oil stream is not greater than 4% water, conventionally heating the used oil stream to a temperature of from about 20°C to about 60°C to form a heated used oil stream; and

_____ (g) extracting, in a continuous process, a volume of water from the heated used oil stream by adding super critical CO₂.

The application has been placed in condition for allowance, prompt reconsideration and allowance are respectfully requested.

Respectfully submitted,

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I hereby certify that a Response is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on:

7/25/02
Date

Frederick Schaefer
Signature